PATHOLOGY AND BACTERIOLOGY.

UNDER THE CHARGE OF

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Infectious Epithelioses and Epitheliomata.—Borrel (*Annales Pasteur*, xvii., 1903, 81) reviews the studies of coccidial and other diseases in animals which are characterized by epithelial proliferation, to which much interest has been given in recent years on account of their possible parasitic etiology in common with cancer. Under the title of "Infectious Epithelioses" the author has grouped several diseases, such as sheep-rot, vaccinia, variola, aphthous fever, bovine pest, and molluscum contagiosum, in which the lesions show epithelial proliferation and the presence of so-called sporozoa which have been described under various names by different authors. A careful study of these lesions shows that they are practically identical; studies on the fresh tissue and fluid and in stained preparations give no evidence that the so-called sporozoa are in reality living organisms, but shows that they are in all probability disintegrated leucocytes. Hitherto the field of contention on the parasitic nature of Guarnieri's vaccine bodies has been the corneal inoculations, but Sikovsky has recently shown that similar bodies can be produced in the cornea with heated vaccine, rabbit serum, or diphtheria toxin. Furthermore, the virus of all but two of the mentioned diseases have been shown to retain their infective power when passed through a Pasteur filter. All these facts lead to the suggestion that these epithelioses may be caused by micro-organisms at present invisible. A comparison of these lesions with the epitheliomata of mice shows similar conditions and suggests the need of further research along the possible bacterial origin of cancer. The possibility of a serum therapy has already been undertaken by the author, but as yet the results do not warrant a communication on this most important phase of the question.

Experimentelle Beitrage zur Pathologie des Blutes.—Dr. P. Schmidt (*Fischer, Jena,* 1902), in this monograph of thirty-nine pages, sketches a series of investigations as to the nature and significance of the basophilic granules in the red blood corpuscles first described by Askanazy in a case of progressive anæmia and later found in many cases of severe anæmia, in particular those due to lead intoxication. Schmidt's conclusion as a result of clinical observation and experiment is that the granules are a sign of regeneration of red cells and not of degeneration as maintained by Grawitz and others; and are thus of the same significance as polychromatophylic and nucleated red corpuscles. These three types of "young" red cells are often found in association. Schmidt's crucial experiment is rather an ingenious one. He is able to find the granules in the circulating blood of the rabbit fifteen minutes after the subcutaneous administration of phenylhydrazine; if even as late as six hours after the injection of the drug he clamps off one ear completely from the circulating blood, he obtains in due time the granules in the red cells of the general circulation, but not in those of the blood of the ear. Similarly after venesection in a rabbit the circulating blood showed polychromatophilic and nucleated red blood cells, while that of the isolated ear remained unchanged. Defibrinated blood treated in test-tube with phenylhydrazine showed signs of disintegration of the red cells, but no basophilic granules. On exposure of an isolated rabbit's ear to the Finsen rays no demonstrable change was noted in the stained blood smear, though the tissues of the ear were markedly affected. These experiments are held to indicate that the basophilic granules are not the product of protoplasmic degeneration. The toxic agent acts like venesection in removing red blood cells from the circulation. There is excessive demand on the bone-marrow, and immature red cells are thrust into the circulating blood; some show complete nuclei, others pyknotic fragments of nuclei, and all transitions to the fine basophilic granules—while others, the polychromatophilic, the author holds, show the result of karyolysis. The granules, then, are derived from the nucleus, and are either thrown off during the mitotic process or are a product of the nuclear degeneration.

Experimental Study of Sheep-rot.—BORREL (*Annales Pasteur*, xvii., 1903, 123) finds that the filtration of sheep-rot pus through a Berkefeld or an ordinary Chamberlain filter will give a filtrate which contains an active virus. There is no organism visible in cover-slips and no growth is obtainable on the ordinary culture media. The presumption is that an ultramicroscopic bacterium is the cause of the disease. Rams highly immunized with the virus give a serum which when mixed with the virus will prevent the evolution of the characteristic pustule and the generalized course of the disease. Such immune serum in several instances has also been used to cure animals in a diseased herd. The cure and prevention of a disease which is of considerable significance seem assured.

Fixation of Tetanus Toxin by Brain Substance.—BESREDKA (*Annales Pasteur*, xvii., 1903, 138) has repeated the experiments of Wassermann and Takaki on the neutralization of tetanus toxin by brain substance which have been used as affirmative data of the Ehrlich "lateral chain" hypothesis. Besredka considers that the fixation of the toxin by the brain has been used as confirmative of the presence of antitoxin in the brain substance. He shows that when tetanus toxin and brain tissue are ground together the mixture does separate all the toxic principles from the supernatant fluid, but that the saturated emulsion is in itself as toxic as the toxin alone. The further addition of tetanus antitoxin removes the toxin from the brain substance and neutralizes it. The brain is subsequently capable of absorbing new amounts of toxin. This proves that the brain itself does not contain a true antitoxin, since it does not neutralize the effects of the toxin. The affinity which exists in brain cells is furthermore not so active as true tetanus antitoxin, since the subsequent addition of this antitoxin will separate the toxin from the brain tissue.

Experimental Tumors.—LECENE and LEGROS (*Bull. de la Soc. Anat. de Paris*, No. 8, 1902, p. 764) report on the results of including pieces of fresh embryonic guinea-pig organs subcutaneously in adult guinea-pigs. Small bits of kidney, adrenal, or both organs were placed under the skin, closed in and left for from fifteen to forty days. Out of six attempts, two gave positive results of the following order: cyst-like tumors were found composed of the enclosed embryonic tissue which had grown distinctly in size and infiltrated the surrounding connective tissue. In both cases the cells histologically were normal in appearance, and in one case the tumor resembled a mixed tumor of the ovary or testicle.

A Study of a Bacillus Resembling the Bacillus of Shiga, from a Case of Fatal Diarrhœa in a Child; with Remarks on the Recognition of Dysentery, Typhoid, and Allied Bacilli.—HISS and RUSSELL (*The Medical News*, 1903, 289) isolated from a fatal case of enterocolitis in a child an organism which presents many points in common with the bacillus of Shiga which is now generally recognized as the cause of acute dysentery. What is undoubtedly the same organism has since been isolated by Flexner, Kruse, and others. Lately Martini and Lentz have claimed that there is a difference between the species Flexner and the true Shiga bacillus on the basis of slight variations in agglutination and the different reaction on mannite litmus agar. The organism isolated by the authors (Bacillus "Y") grows on the ordinary media and sugars as does B. dysenteriæ. On mannite, however, it produces acid, as is shown in both the litmus medium of Lentz and in the serum water medium of Hiss, in this respect resembling B. typhosus and differing from the Shiga strain of B. dysenteriæ. Agglutinations with normal horse serum (Flexner) and antityphoid serum are positive. The serum of a rabbit highly agglutinative for B. "Y" fails to agglutinate the various strains of B. dysenteriæ, but agglutinates distinctly B. typhosus. The results with this organism suggest the possible errors of diagnosis by agglutination as well as mistakes in the identity of an organism based on insufficient cultural data.

Emergency Report on Surra.—SALMON and STILES (*Bull. No.* 42, *Bureau of Animal Industry*, Washington, 1902) have published this report on a disease which has already been much studied on account of the diagnosis of its occurrence in the Philippines by Smith and Kinyoun and the subsequent prohibition of landing animals from these islands at any port in the United States. Surra is a specific and continuous febrile disease occurring in horses, camels, and other domestic animals. The disease is caused by a microscopic, flagellated parasite, the Trypanosoma Evansi, and is easily transmitted by inoculation, the transmission being almost entirely due to the biting of flies of the genus Tabanus (horse flies). Parasites closely allied in species occur in nearly all parts of the world, and in some cases cause similar diseases, such as tse-tse fly disease, dourine, mal de caderas, and rat trypanosomiasis.

The disease surra occurs more frequently in wet weather and is invariably fatal. Treatment is most unsatisfactory, arsenic alone having yielded fair results in certain cases. Immunization has as yet been entirely unsuccessful and prevention is difficult, and to be successful must consist in protection from flies. The symptoms of surra are fever, remittent or unremittent in type, and often relapsing urticaria, petechia on mucous surfaces, œdema and progressive anæmia, and emaciation followed by death in from forty to sixty days. The introduction of the disease into the Philippines is uncertain, but it has probably existed there some time. Its introduction, from a military and economic standpoint, into the United States, would be a serious matter in view of its great lethality. A careful consideration of allied diseases together with their individually causative parasites, is incorporated in the text and the report is followed by a complete bibliography of the entire subject by Hassall.

The Role of the Toxins in Inflammation of the Eye.—RANDOLPH (*Bulletin of the Johns Hopkins Hospital*, 1903, xiv. 47) finds that continued instillations of the toxins of B. diphtheriæ, gonococcus, streptococcus, staphylococcus aureus, and B. xerosis, produced by filtration of sugar-free bouillon cultures of varying ages, produced no reaction on the normal conjunctivæ of rabbits. If, on the contrary, small amounts of the filtrates from even most recent cultures were injected into the tissue of the conjuntiva, marked inflammatory reaction followed. This is of interest as indicating that the bacteria which are causative of conjunctivitis are probably dependent in their action upon some lesion of the conjunctiva. This conjunctival method of inoculation is of further interest, as it serves to detect toxins in certain bacteria which had hitherto not been supposed to produce extracellular toxins. A study of the bacteriology of the normal rabbit's conjunctiva showed that cocci are always present.

The Free Receptors of B. Typhosus and B. Dysenteriæ and Dysentery Toxin.—NEISSER and SHIGA (*Deutsche med. Woch.*, 1903, xxix., No. 4) have succeeded in separating the active immunizing principles (free receptors) from cultures of B. typhosus and B. dysenteriæ. These toxins are made by suspending a twenty-four hour agar culture of the organism in saline solution for one hour, killing the bacteria by heat, and, after letting the solution stand at 37° C. for two days, filtering through a Reichel filter. The bacteria-free filtrate contains the active bacterial receptors, for it will inhibit the normal agglutinating power of the specific immune serum, and when injected into animals will give rise to agglutinins and active bacteriolysins in the animal's blood. This method offers great advantages in the case of the B. typhosus, as these filtrates are free from the harmful effects which are caused by injections of vaccines composed of the dead bacilli. In the case of the dysentery filtrates a dose of 0.5 c.c. into a rabbit will cause diarrhœa and death with eliminative lesions of the small intestine.—F. P. G.